

**Commonwealth of Kentucky**  
**Division for Air Quality**  
**EXECUTIVE SUMMARY**

FINAL  
TITLE V OPERATING  
PERMIT: V-07-018  
TENNESSEE VALLEY AUTHORITY  
PARADISE FOSSIL PLANT  
DRAKESBORO, KY  
NOVEMBER 1, 2007  
PERMIT REVIEWER, MARTHA M. ALLMAN  
SOURCE I.D. #:21-177-00006  
AGENCY INTEREST: 3239  
ACTIVITY: APE2007001

**BACKGROUND**

On April 9, 2007, Tennessee Valley Authority (TVA) submitted an update to the Title V Permit application for its Paradise Fossil Plant (PAF) originally submitted in May 1996. The update was provided to address objections made by the EPA to the proposed permit, V-04-024, initially issued on December 29, 2004. TVA requested that this permit be withdrawn on June 23, 2006. To address EPA objections, TVA has agreed to reduce the Unit 3 limit of 5.4 lbs SO<sub>2</sub>/MMBtu to 1.2 lbs SO<sub>2</sub>/MMBtu, effective when the unit is scrubbed and discharging flue gas through the new scrubber stack. The new scrubber for Unit 3 is a single module unit and was constructed with by-pass capabilities to the original stack. When Unit 3 is not scrubbed, the emission limit will be 3.1 lbs SO<sub>2</sub>/MMBtu, effective when discharging flue gas through the existing Unit 3 stack.

TVA addressed another EPA objection by removing from the application two lime storage silos (formerly EQPT15, renumbered as Emission Units 53-54) as these are decommissioned and will not be returned to service. TVA further agreed to additional monitoring requirements for the hours of operation and limestone throughput for emission Unit 3 Limestone Handling system (formerly GACT 10, renumbered as Emission Units 75 and 76).

In addition the facility has provided updates and subsequent permitted modifications that were either missed in the original Title V application but surfaced from their latest auditing. The updates include new activities associated with the addition of the Coal Processing system, updated forms for the addition of the Selective Catalytic Reduction (SCR) units on each heat exchanger, the Unit 3 Limestone Handling system, updates to the Unit 3 section of the application to address the new scrubber, and the addition of the Coal Fines Recovery Process. These units were constructed pursuant to 401 KAR 51:017, Section 22.

**FACILITY DESCRIPTION**

The facility consists of three cyclone-furnace coal-fired boilers, three distillate oil-fired heating boilers, eleven distillate oil-fired space heaters, three natural-draft cooling towers, and solid fuel, limestone, ash, and gypsum handling processes.

Coal is delivered by rail, truck and barge. Currently, most of the coal is non-compliance coal and is cleaned in a coal wash plant. TVA is currently co-firing coal fines and plans to begin co-firing wood waste. Waste products from sawmills and other woodworking facilities will be burned at a maximum of 5% of the boilers heat input (13% by weight).

All three coal-fired boilers are equipped with staged overfire air and selective catalytic reduction modules for nitrogen oxides emission control. Boiler Units 1 and 2 are equipped with venturi-type limestone slurry flue gas desulfurization scrubbers. Boiler Unit 3 is equipped with an electrostatic precipitator and a wet limestone FGD scrubber. Fly ash collected by the ESP is sluiced by the wet fly ash handling system to the fly ash pond for disposal. Bottom ash (slag) is wet sluiced to a storage pond, dewatered and then reclaimed for sale to an offsite customer. Gypsum waste slurry effluent from the limestone FGD scrubbers is wet sluiced to the onsite stacking area for disposal.

#### **PUBLIC AND AFFECTED STATE REVIEW:**

The affected state (Tennessee) was notified of the issuance of the draft permit on June 29, 2007 via e-mail. On August 4, 2007, the public notice on availability of the draft permit and supporting material for comments by persons affected by the plant was published in the *Central City Greenville Leader News*. The public comment period expired 30 days from the date of publication.

Comments were received from Robert Ukeiley, Attorney at Law, Berea, Kentucky on August 1, 2007. Attachment A to this document lists the comments received and the Division's response to each comment. No changes were made as a result of the comments.

#### **U.S. EPA REVIEW:**

The U.S. EPA was notified of the issuance of the proposed permit on August 20, 2007 via e-mail. The comment period originally expired 45 days from the date of the e-mail, however U.S. EPA requested an additional 21 days of review time. That period expired October 25, 2007.. No comments were received during this period. The permit is now being issued final.